

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***PERMIT STATEMENT OF BASIS***

(DRAFT)

Title V, Construction / Operating

Permit: V-08-026

J.L. French Corporation

Glasgow, KY 42141

June 2, 2008

Linda Martin, Reviewer

SOURCE ID: 21-009-00065

SOURCE A.I. #: 78

ACTIVITY ID: APE20050002

**SOURCE DESCRIPTION:**

J.L. French Corporation, formerly Nelson Metal Products Corporation, is a secondary aluminum processing source in Glasgow, Kentucky that produces die castings. The plant consists of a secondary aluminum production operation and a die casting operation. Scrap aluminum is processed into die castings for parts for internal combustion engines. The Standard Industrial Classification (SIC) code for this aluminum die casting source is 3363.

Scrap aluminum, sows, ingot and alloying materials are the raw feed material that is charged to the furnaces at this plant. Secondary aluminum production operations utilize either induction furnaces, which use only clean charge; or reverberatory furnaces which may or may not use clean charge.

Scrap aluminum may be fed into the aluminum scrap shredder to be reduced to a smaller size before processing by the rotary drum preheater or the melt furnaces. The particulate emissions from the uncontrolled shredder are released as fugitive emissions. As an alternative operation oily and oil-free scrap chips that are unpainted/uncoated may be processed in the natural gas-fired rotary drum preheater. The preheater, which was considered as a thermal chip dryer in initial TV Permit V-00-038, operates solely in a low-temperature mode of 350°F or less to remove water from the scrap. Since this temperature is below the boiling point of applied machining coolants and die lubricants, the unit qualifies as a preheater under 40 CFR 63.1503 and not a thermal chip dryer. The exhaust from the preheater is vented to the lime-injected baghouse.

After processing at the preheater, the charge is introduced into one of two induction furnaces. Additionally, raw feed material received by the source as clean charge may also be introduced directly (i.e., no preheating) into the induction furnaces. The induction furnaces are classified as group 2 furnaces under 40 CFR 63.1503 because they process only dried clean scrap. Fluxing is not conducted in group 2 furnaces. The electric induction furnace emissions are ducted to the lime injected baghouse.

This source also uses three reverberatory melting furnaces. These three furnaces are classified as group 1 furnaces under 40 CFR 63.1503 due to the use of chlorine gas for reactive fluxing and raw material charging with aluminum scrap that can contain paint, lubricants, coatings, or other foreign materials.. Chlorine injection/fluxing is performed in the side wells to remove magnesium and other impurities which rise to the top of side well of the furnace and are manually skimmed off as dross.

The reactive fluxing takes place only in the side wells of these furnaces and the level of molten aluminum is maintained above the arch way between the sidewells and hearth; therefore, the hearth/combustion chamber and side door are not subject to 40 CFR 63 Subpart RRR emissions limits. Nevertheless, all emissions from the melt/hold furnaces are routed to the lime injected baghouse.

A rotary dross cooler was previously operated at this plant; however, this unit was removed from the source during November 2007. Currently, skimmed molten dross is placed onto pads and cooled in open areas within the production building's alloy department. Because the dross is not agitated during cooling, any fugitive particulate emissions generated by the new cooling process are expected to be negligible given the lack of agitation and the capture/control from the production building. The cooled dross is shipped off-site for recycling.

The molten aluminum from the melt furnaces is transferred to holding furnaces that supply each die cast machine. The aluminum is injected into a die cast from the holding furnace, allowed to solidify, and the cast part is removed for finishing. A solution of water and die lube is sprayed on the open die for cooling and to apply a release agent for easy removal of the die cast part. The die lube consists of 87.2% water, 12.0% petroleum oil, and 0.8% graphite and paraffin wax. The die lube is diluted with water at 50:1 before application. Emissions from the die casting operations consist of organic compounds that are emitted as fugitive emissions.

Without consideration of federally enforceable limits, the potential to emit (as defined in 401 KAR 52:001, Section 1 (56)) of  $PM_{10}$  is less than the major source threshold. The potential to emit of any single hazardous air pollutant (HAP) and the combination of HAPs exceeds the major source thresholds of 10 and 25 tons per year, respectively. The source is also subject to the requirements of 40 CFR 63, Subpart RRR, as determined by the Division at the time of initial TV permitting. As such, the source is subject to the Title V operating permit requirements pursuant to 401 KAR 52:020. Permit V-00-038 was issued to the source on December 19, 2000, with a subsequent revision approved on July 25, 2003. Permit No. V-08-026 is the renewed issuance of the source's Title V operating permit.

#### COMMENTS:

(1) Emission Units:

The source consists of the following significant emission units:

001 (P01)	Rotary Drum Preheater
002 (IF01-IF02)	Induction furnaces – two (2)
003 (RMF01-RMF03)	Reverberatory melt furnaces – three (3)
004 (D01)	Dross cooling
005 (HF01-08)	Holding furnaces - eight (8)
008 (05-12)	Holding furnaces - eight (8)
009 (13-14)	Holding furnaces – two (2)
010 (15)	Holding furnaces – one (1)
018 (-)	Aluminum scrap shredder
014 (34-35)	BCP Rotoblasters – two (2)
015 (36)	BCP Rotoblaster – one (1)
016 (37)	BCP Rotoblaster – one (1)
017 (GEN 01)	Backup generator

The source also consists of a total of 22 die casters as emission points 006, 007, 011, 012 and 013. Although the Division has included emissions from die casting machinery on their established list of insignificant activities, such equipment is included in the significant emission units Section B of this permit to ensure consistency with the original TV permit. The permittee shall continue to comply with the applicable requirements established therein, as provided below.

(2) Insignificant activities are included in Section C of permit V-08-026.

(3) Types of Control and Efficiency:

The permittee will control the emissions from the preheater, induction furnaces and reverberatory furnaces using a baghouse outfitted with a lime injection system. The baghouse will control particulate matter emissions and the lime injection system will control hydrogen chloride emissions and dioxin/furans generated during chlorine fluxing. There are no requirements for preheater emissions control and related use of the baghouse is voluntary.

The permittee shall operate a bag leak detection system to meet the monitoring requirements for the lime-injected baghouse. The permittee shall have procedures in place to initiate corrective action within 1-hour of any alarm of the bag-leak detectors and complete the corrective action procedures in accordance with the OM&M plan. The permittee shall operate each fabric filter such that the bag leak detection system alarm does not sound more than 5 percent of the operating time during a 6-month period. The permittee shall maintain the 3-hour block average inlet temperature for the lime-injected baghouse at or below the average temperature established during the performance test, plus 25°F. The permittee will also maintain the free-flowing lime in the hopper to the feed device for the lime-injected baghouse at all times and maintain the lime feeder setting at the same level established during the performance test.

Emissions from the preheater, induction furnaces, and reverberatory melt furnaces are currently vented to one lime-injected baghouse, with a particulate control efficiency of 99.0%. J.L. French also utilizes an ammonia injection system in the exhaust ductwork as an additional control device for hydrogen chloride (HCl) and dioxins/furans (D/F), yielding a combined control efficiency from both control devices of 90.0% for hydrogen chloride and dioxins/furans.

J.L. French has indicated during this review that an afterburner may be installed in the future for organic emissions control at the preheater. This afterburner would allow the preheater to be operated as a scrap dryer/delaquering kiln/decoating kiln under 40 CFR Part 63, Subpart RRR. The permittee also has indicated the possibility of installing additional baghouses at the plant. Since the afterburner and additional baghouses are conceptual, such equipment is not included in this permit. However, should the permittee finalize plans for this equipment in the future, an application requesting revision to this permit can be submitted to Division for review and consideration at any time.

- (4) Emission Factors: Emission factors from AP-42 were used to determine the natural gas combustion emissions from the rotary drum preheater (EP001) and reverberatory melt furnaces (EP004, 005 and 006). THC, HCl, D/F and particulate emissions from the preheater, reverberatory melt furnaces and induction furnaces; and particulate from the aluminum shredder, were calculated based on source stack tests. The emissions of other pollutants from the remaining activities (holding furnaces; die casters; rotoblasters, backup generator) were calculated using the emission factors based on WebFIRE; AP-42 and material balance, as provided by the permittee.
- (5) Applicable Regulations:
- (a) 401 KAR 59:010, *New Process Operations*, applies to each affected facility not subject to another emission standard for particulate matter (PM) in Chapter 59 of 401 KAR that commenced on or after July 2, 1975. This regulation applies to the melt furnaces, preheater, die casters, electric holding furnaces and rotoblasters. The initial Title V permit qualified the backup generator (EP 017 (GEN01)) as subject to the requirements of this rule. However, pursuant to 401 KAR 59:010, Section 2, process weight does not include liquid fuel charged, combustion air, or uncombined water; therefore, this rule is not included as an applicable requirement for the generator in this Title V permit V-07-004.
  - (b) 40 CFR 63, Subpart RRR, *National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production*, as incorporated by reference in 401 KAR 63:002, applies to the group 1 and group 2 furnaces and aluminum scrap shredder, each as an affected source located at a secondary aluminum production facility that is a major source of HAPs. This determination is consistent with that made by the Division during the initial TV permit review. The related operating and emission limitations, and monitoring, record keeping and reporting requirements are included in TV renewal permit No. V-08-026.

During this review the permittee has indicated that performed enclosure testing on the shredder has been conducted to demonstrate that particulate matter emissions from the shredder are less than 10% of the applicable MACT emission limit. Based on the test results, J.L. French has applied for a variance from the repeat performance testing requirements of Subpart RRRR for the shredder. This notwithstanding, the repeat testing requirements pursuant to 40 CFR 63.1511(e) is included in the permit until or unless such time that a waiver is approved.

- (6) Non-applicable Regulations:
- (a) 40 CFR 60 Subpart IIII, *New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines*, does not apply to the emergency diesel generator, because the unit was installed prior to July 11, 2005 and no approval for modification or reconstruction has been issued.
  - (b) 40 CFR 64, *Compliance Assurance Monitoring*, is not applicable to this source. Pursuant to 40 CFR 64.2(b)(1)(i), this rule does not apply to the secondary aluminum emission units since they are subject to a Section 112 standard (i.e., 40 CFR 63 Subpart RRR). Further, there are no other pollutant specific emission units at this source that have potential pre-control device emissions of a regulated air pollutant equal or greater than 100 percent of the amount, in tons per year, required for unit to be classified as a major source.

## **EMISSION AND OPERATING CAPS DESCRIPTION:**

Except for the diesel fuel fired emergency generator (EP 017), which will continue to operate in accordance with the 720 hour per year restriction of original Title V permit No. V-00-038, there are no emission and/or operating caps in the permit. However, to comply with the secondary aluminum NESHAP, 40 CFR 63, Subpart RRR, the permittee shall comply with the following emission limitations:

### **Aluminum scrap shredder**

PM: 0.010 grain (gr)/dry standard cubic foot (dscf) [40 CFR 63.1505(b)(1)]

### **Preheater**

There are no Subpart RRR emissions limitations applicable to the preheater, as this unit is operated at 350 degrees F or lower and is used solely to evaporate water from scrap aluminum prior to charging to the furnaces.

### **Group 1 furnaces (3 reverberatory furnaces)**

PM: 0.40 lb/ton of feed/charge [40 CFR 63.1505(i)(1)]

D/F:  $2.1 \times 10^{-4}$  gr/ton of feed/charge [40 CFR 63.1505(i)(3)]

HCl: 0.40 lb/ton of feed/charge or 10 percent of the uncontrolled emissions, by weight [40 CFR 63.1505(i)(4)]

### **Group 2 furnaces (2 electric induction furnaces; 21 electric holding furnaces)**

There are no Subpart RRR emission limitations applicable to the group 2 furnaces, as these units process only clean charge; and they do not perform fluxing or they perform fluxing using only nonreactive, non-HAP-containing/non-HAP-generating gases of agents.

## **PERIODIC MONITORING:**

Periodic monitoring shall be performed on the baghouse used to control pollutant emissions from the metal production equipment (i.e., induction furnaces, reverberatory melt furnaces, and preheater) in accordance with 40 CFR 63, Subpart RRR, as summarized below. Only the reverberatory melt furnaces are required by Subpart RRR to utilize the baghouse for emissions control. Although exhaust gases from the induction furnaces and the preheater are ducted to the baghouse, Subpart RRR does not establish emission limits, nor require emissions control, for these units.

- (1) The permittee shall install, operate, and maintain a capture/collection system for each affected source or emission unit equipped with an add-on pollution control device. The permittee shall inspect each capture/collection system at least once each calendar year to ensure that each system is operating properly.
- (2) The permittee shall install, calibrate, operate, and maintain a device to measure and record the total weight of feed/charge to, or the aluminum production from, the affected source or emission unit over the same operating cycle or time period used in the performance test. The permittee will verify the calibration of the weight measurement device in accordance with the schedule specified by the manufacturer, or if no calibration schedule is specified, at least once every 6 months.
- (3) The permittee shall install, calibrate, maintain, and continuously operate the bag leak detection system on the lime-injected baghouse serving the emission units.
- (4) The permittee shall verify that lime is always free-flowing by installing, operating and

maintaining a load cell, carrier gas/lime flow indicator, carrier gas pressure drop measurement system or other system to confirm that lime is free-flowing.

- (5) The permittee shall inspect the labels for the emission units at least once per calendar month to confirm that posted labels are intact and legible.
- (6) The permittee shall install, calibrate, operate, and maintain a device to continuously measure and record the weight of gaseous or liquid reactive flux injected to the group 1 furnace.
- (7) The permittee shall monitor the number of total operating hours during each 6-month reporting period for the emission units.

The permittee also shall provide reasonable assurance that the PM/PM10 limitations are met for the remaining significant emission units by monitoring the amounts and types of process materials used and the hours of unit operation each calendar month, and performing related emission calculations. For the opacity limitation, the permittee shall be required to perform a qualitative visual observation of emissions from the affected units' stacks on a monthly basis and maintain a log of the observations, and then determine the opacity of emissions by Reference Method 9 if visible emissions are observed. This methodology is consistent with the original TV permit and current Division requirements for other sources. While the original TV permit required the same frequency (monthly) of visible emissions monitoring for the rotoblast units, renewal permit No. V-07-004 is revised to require similar monitoring on a weekly basis for reasonable assurance of proper control device (scrubber) operation.

**OPERATIONAL FLEXIBILITY:**

None

**CREDIBLE EVIDENCE:**

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.